

2-2 HW Answer Key

1. $\frac{4}{x}, x \neq 0, 2$

2. $\frac{(x+6)}{(x-6)}, x \neq 6$

3. $2, x \neq -4$

4. $3, x \neq \frac{2}{3}$

5. $\frac{2x^2-4x-1}{(x+3)(x-3)}, x \neq \pm 3$

6. $\frac{14x^2-7x+2}{(x+2)(4x-1)}, x \neq \frac{1}{4}, -2$

7. $\frac{(7)(2x-3)}{(3)(x-2)}, x \neq 2$

8. $\frac{1}{x-2}, x \neq 2, 4$

9. See next page

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Alg 2 Homework 2-2Name Key (2016)Simplify. Identify any x-values for when the expression is undefined.

1. $\frac{4x-8}{x^2-2x} = \frac{4(x-2)}{x(x-2)} = \frac{4}{x}$
 $x \neq 0, 2$

2. $\frac{x^2-36}{x^2-12x+36} = \frac{(x-6)(x+6)}{(x-6)(x-6)}$
 $x \neq 6 = \frac{x+6}{x-6}$

Add or subtract. Identify any x-values for when the expression is undefined.

3. $\frac{3x+2}{x+4} - \frac{(x-6)}{x+4} = \frac{2x+8}{x+4}$
 $x \neq -4 = \frac{2(x+4)}{x+4}$
 $= \frac{2}{1} = 2$

4. $\frac{9x}{3x-2} + \frac{6}{2-3x} \left(\frac{-1}{-1} \right) = \frac{9x}{3x-2} + \frac{-6}{3x-2}$
 $x \neq \frac{2}{3} = \frac{9x-6}{3x-2}$
 $= \frac{3(3x-2)}{3x-2}$
 $= 3$

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5. $\frac{3x-4}{x^2-9} + \frac{2x-1}{x+3}$

$$\frac{3x-4}{(x-3)(x+3)} + \frac{2x-1}{x+3} \cdot \frac{(x-3)}{(x-3)}$$

$$\frac{3x-4}{(x-3)(x+3)} + \frac{2x^2-6x-x+3}{(x+3)(x-3)}$$

$$\frac{2x^2-4x-1}{(x+3)(x-3)}$$

$$x \neq \pm 3$$

6. $\frac{3x-2}{x+2} + \frac{2x}{4x-1}$

LCD = $(x+2)(4x-1)$

$$\frac{(3x-2)(4x-1)}{(x+2)(4x-1)} + \frac{(2x)(x+2)}{(4x-1)(x+2)}$$

$$\frac{12x^2-3x-8x+2}{(x+2)(4x-1)} + \frac{2x^2+4x}{(x+2)(4x-1)}$$

$$\frac{14x^2-7x+2}{(x+2)(4x-1)}$$

$$x \neq -2, \frac{1}{4}$$

$(x+2)(4x-1) \neq 0$
 $x+2 \neq 0 \quad 4x-1 \neq 0$
 $x \neq -2 \quad 4x \neq 1$
 $x \neq \frac{1}{4}$

7. $\frac{2x-7}{x-2} + \frac{8x}{3x-6}$

$$\left(\frac{3}{3}\right) \frac{2x-7}{x-2} + \frac{8x}{3(x-2)}$$

$$\frac{6x-21}{3(x-2)} + \frac{8x}{3(x-2)}$$

$$\frac{14x-21}{3(x-2)} = \frac{7(2x-3)}{3(x-2)}$$

$$x \neq 2$$

8. $\frac{1}{x-4} - \frac{2}{x^2-6x+8}$

LCD = $(x-2)(x-4)$

$$\left(\frac{x-2}{x-2}\right) \left(\frac{1}{x-4}\right) - \frac{2}{(x-2)(x-4)}$$

$$\frac{x-2}{(x-2)(x-4)} - \frac{2}{(x-2)(x-4)}$$

$$\frac{x-4}{(x-2)(x-4)} = \frac{1}{x-2}$$

$$x \neq 2, 4$$

9. Show why you need to have like denominators when adding fractions.

$$\frac{1}{2} + \frac{2}{4} = \frac{1}{2} + \frac{1}{2} = 1 \quad \checkmark$$

$$\frac{1}{2} + \frac{2}{4} \stackrel{?}{=} \frac{3}{6} = \frac{1}{2} \quad \times$$

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Fri's notes: Let's just find the LCD for #6 & 8

Do 5, 7, 8, 6 if time & in that order.

5. $\frac{7}{x-5} + \frac{4}{5-x} - 1$

LCD = $(x-5)$

$$= \frac{7}{x-5} + \frac{-4}{x-5}$$

$$= \frac{3}{x-5}, x \neq 5$$

6. $\frac{y+1}{y^2-y} - \frac{6}{y^2-1}$

LCD = $y(y-1)(y+1)$

$$\frac{y+1}{y(y-1)} \cdot \frac{(y+1)}{(y+1)} - \frac{6}{(y+1)(y-1)} \cdot \frac{y}{y}$$

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7. $\frac{2}{m-1} + \frac{3}{m+1} - \frac{4}{m^2-1}$ DOTS

$LCM = (m-1)(m+1)$

$= \frac{2}{m-1} \cdot \frac{m+1}{m+1} + \frac{3}{m+1} \cdot \frac{m-1}{m-1} - \frac{4}{(m+1)(m-1)}$

$= \frac{2m+2 + 3m-3 - 4}{(m+1)(m-1)}$

8. $\frac{3}{x^2-2} - \frac{1}{3x+3}$ LCD = $3(x-2)(x+1)$

$\frac{3}{x^2-2} = \frac{3}{(x+1)(x-2)}$ $\frac{x-2}{x-2}$

$\frac{1}{3x+3} = \frac{1}{3(x+1)}$ $\frac{x-2}{x-2}$

$R = \frac{-2}{5} = -1$

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Simplify and state the domain restrictions.

1. $\frac{5x+1}{x^2-64} - \frac{4x-7}{x^2-64}$

2. $\frac{3x-8}{x^2-9} - \frac{2x-5}{x^2-9}$

$= \frac{3x-8-(2x-5)}{x^2-9} = \frac{3x-8-2x+5}{x^2-9} = \frac{x-3}{(x+3)(x-3)} \neq 0$

$= \frac{1}{x+3}$

$x \neq \pm 3$

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3. $\frac{6}{x} + \frac{7}{5x^2}$

$2x^3y$
 $LCD = 2x^3y$
 4. $\frac{5}{xy} + \frac{7}{2x^2} = \left(\frac{5}{xy}\right)\frac{2x}{2x} + \left(\frac{7}{2x^2}\right)\frac{y}{y} = \frac{10x + 7y}{2x^3y}$
 $x \neq 0, y \neq 0$
 $\frac{10x^2 + 7xy}{2x^3y} = x \left(\frac{10x^2 + 7xy}{2x^3y} \right)$

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5. $\frac{5}{x} + 8$

$LCD = x-9$
 6. $\frac{7}{1} - \frac{4}{x-9} = \left(\frac{7}{1}\right)\frac{x-9}{x-9} - \frac{4}{x-9} = \frac{7x-63}{x-9} - \frac{4}{x-9}$
 $= \frac{7x-67}{x-9}, x \neq 9$

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7. $\frac{x-1}{x-2} - \frac{x^2+4x-4}{x^2+4x-12}$

8. $\frac{x+2}{x-7} - \frac{x^2+4x+13}{x^2-4x-21}$

LCO = $(x-7)(x+3)$

$$= \frac{(x+2)(x+3)}{(x-7)(x+3)} - \frac{x^2+4x+13}{(x-7)(x+3)}$$

$$= \frac{x^2+5x+6}{(x-7)(x+3)} - \frac{x^2+4x+13}{(x-7)(x+3)}$$

$$= \frac{x^2+5x+6-x^2-4x-13}{(x-7)(x+3)}$$

$$= \frac{-x-7}{(x-7)(x+3)} = \frac{1}{x+3}, x \neq -3, 7$$

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9. $\frac{4x}{x^2-1} + \frac{3x}{x+1} - \frac{4}{x-1}$

10. $\frac{2}{x+3} - \frac{x}{x-1} + \frac{x^2+2}{x^2+2x-3}$

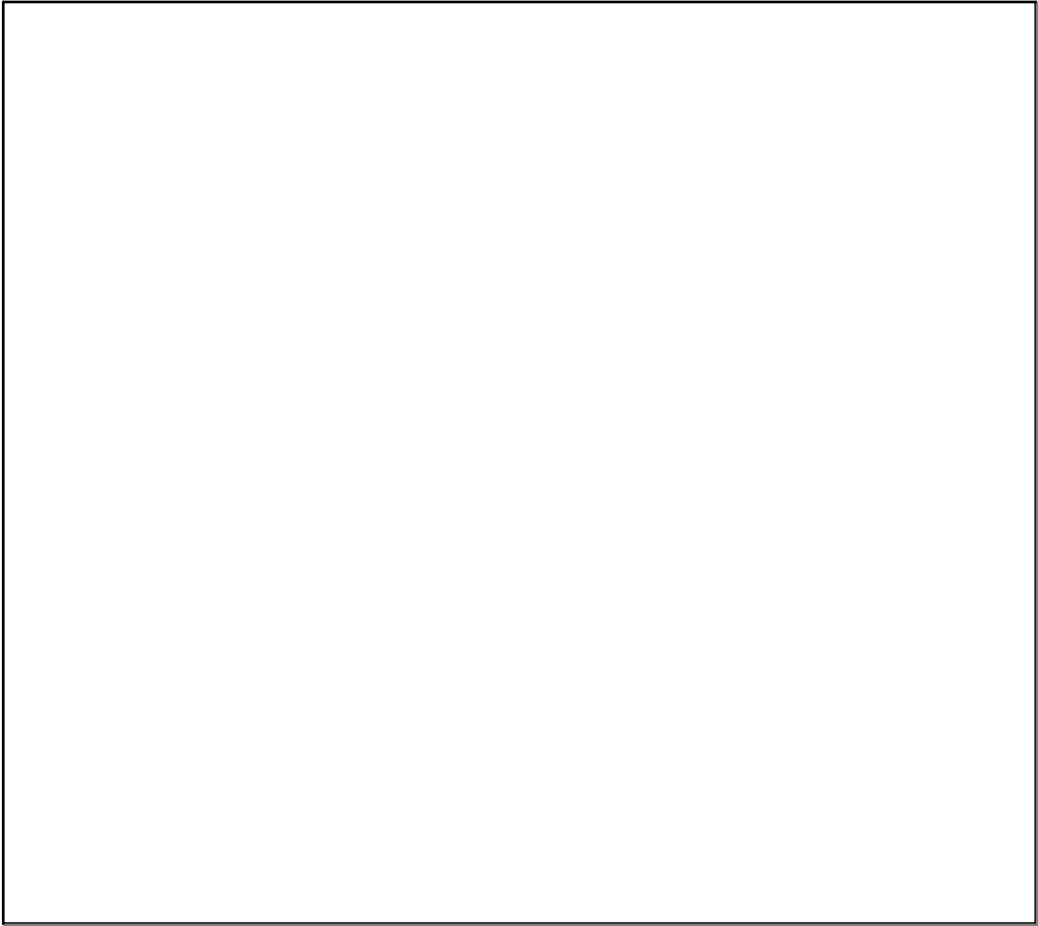
LCO = $(x+3)(x-1)$

$$= \frac{2(x-1)}{(x+3)(x-1)} - \frac{x(x+3)}{(x-1)(x+3)} + \frac{x^2+2}{(x+3)(x-1)}$$

$$= \frac{2x-2-x^2-3x+x^2+2}{(x+3)(x-1)}$$

$$= \frac{-x}{(x+3)(x-1)}, x \neq -3, 1$$

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Oct 1-9:35 AM